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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
08/958,568	10/28/1997	HISASHI OHTANI	07977/192001	3554

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EXAMINER

HU, SHOUXIANG

ART UNIT PAPER NUMBER

2811

DATE MAILED: 09/25/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application N .

08/958,568

Applicant(s)

OHTANI ET AL.

Examiner

Shouxiang Hu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 June 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 7-12, 29-55, 61, 73-76, 83 and 85-101 is/are pending in the application.
- 4a) Of the above claim(s) 7-12 and 29-55 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 61, 73-76, 83 and 85-101 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 61, 73-76, 83, 85, 87-92 and 95-99 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art ("AAPA") in view of Kobeda et al. ("Kobeda"; 5,338,702) and/or Sasaki et al. ("Sasaki"; 5,818,069).

AAPA discloses a semiconductor display device (Figs. 2(A)-2(F)), comprising a first interconnection (25) formed on the surface of an insulating substrate (21); a second interconnection (35) provided on an interlayer dielectric (33). It differs from Applicant's claimed invention mainly in that: the AAPA does not have a local interconnection structure including a layer comprising metal provided on the insulating surface and directly connecting the first interconnection with one of the source/drain regions without through a contact opening, and the layer comprising metal and the second interconnection are connected through a contact hole located outside the source region, drain region and the first interconnection region.

However, one of ordinary skill in the art would readily recognize that such type of local interconnection structure can be formed through a local interconnection layer for increasing the integration density and simplifying the process, as evidenced in Kobeda.

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Kobeda teaches to form an interconnection structure (Fig. 3-5) comprising a layer comprising metal (30') directly connecting a source/drain region to a nearby first interconnection (the right gate line) through no contact hole. And, Kobeda further teaches to form a second interconnection (22) connected to the first interconnection layer (30') through a contact opening in an interlayer dielectric outside the source/drain region and outside the first interconnection as well.

In addition, one of ordinary skill in the art would readily recognize that aluminum is one of the few commonly used materials for top interconnection layers; that silicon nitride and silicon oxide are two of the commonly used dielectric interlayer materials; and that glass substrate is commonly used as an insulating substrate in a TFT display device, as evidenced in Sasaki (see col. 10, lines 44-47, and col. 11, lines 37-45).

Therefore, it would have been obvious to one of ordinary skilled in the art at the time the invention was made to incorporate the interconnection structure of Kobeda and along with the material choices of Sasaki into the semiconductor device of AAPA, so that a semiconductor device with increased integration density and simplified process would be obtained.

Regarding claims 95-101, the (gate) interconnection (25) in AAPA (see Fig. 2(A)) is formed in a same layer as the gate electrode (24).

3. Claims 86, 93, 94, 100 and 101 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art ("AAPA") in view of Kobeda et al. ("Kobeda"; 5,338,702) and/or Sasaki et al. ("Sasaki"; 5,818,069), as applied to claims

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61, 73-76, 83, 85, 87-92 and 95-99 above, and further in view of Tang et al. ("Tang; 4,890,141).

The disclosures of AAPA, Kobeda and Sasaki are discussed as applied to claims 61, 73-76, 83, 85, 87-92 and 95-99 above.

Although AAPA, Kobeda and Sasaki do not expressly disclose that the metal comprised in the layer comprising metal can be a same metal as the one in the source/drain silicide region, Tang teaches to form a local interconnection (Fig. 4a) comprising a layer comprising Ti (202) directly connecting a source/drain Ti-silicide region (the top portion of 204) and a nearby first interconnection (212) through no contact hole.

Therefore, it would have been obvious to one of ordinary skilled in the art at the time the invention was made to make the semiconductor device collectively taught by AAPA, Kobeda and/or Sasaki with the local interconnection layer comprising a same metal as the one in the source/drain silicide layer, as taught in Tang, so that a device with increased integration density and with further simplified process would be obtained.

Response to Arguments

4. Applicant's arguments with respect to claims 61, 73-76, 83 and 85-101 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shouxiang Hu whose telephone number is (703) 306-

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5729. The examiner can normally be reached on Monday through Thursday, 7:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on (703) 308-2772. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



SH

September 24, 2002